Society of SAME American Military Engineers

Environmental Community of Interest
Industry-Government Engagement PFAS Project
Avoiding PFAS Information Overload:
Targeted Training for Operational Entities

PFAS Regulations and Other Organizations' Activities

What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a broad class of synthetic compounds developed for application in a wide range of industrial and commercial goods. The two most widely known PFAS are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS); these and many more are now being studied for their potential to present environmental and drinking water health concerns.

How are PFAS linked to the Department of Defense?

Since the 1970s, the Department of Defense (DoD) required aviation and fueling operations to use military specification (Mil-Spec) aqueous film forming foam (AFFF) containing PFAS. AFFF use for training and emergency response and other miscellaneous uses resulted in the release of PFAS into the environment at many DoD facilities. The DoD has comprehensively reviewed past operations where AFFF was used and sampled for PFAS to understand potential effects on drinking water and environmental media.

DoD proactively responded to the PFAS issue by:

- Forming the DoD PFAS Task Force in 2019
- Testing DoD-operated drinking water systems and eliminating identified unsafe exposures through mitigation measures, such as bottled water, treatment, or termination of use of specific supplies
- Assessing PFAS groundwater concentrations at most DoD installations through Site Inspections
- Replacing legacy AFFF containing PFOS and PFOA in fire protection systems with alternative foams (e.g., "C6 foam") and drafting a new Mil-Spec for Fluorine-Free Foam (F3)
- Partnering with other government agencies to jointly invest > $300M in research and development of technologies to reduce potential health risks from PFAS.

How have Federal PFAS regulations evolved?

EPA negotiated a PFAS Stewardship Program, in which manufacturers voluntarily phased out PFOS and PFOA manufacture in the United States (U.S.) starting in 2002. At that time, EPA began studying the use and occurrence of other PFAS, found in thousands of commercial and industrial products, as well as assessing the toxicology of key PFAS.

In October 2021, EPA issued its *PFAS Strategic Roadmap*[1] that detailed planned actions to address PFAS, reduce their presence in the environment and reduce human exposure.

PFAS regulations *change rapidly. For the very latest PFAS regulations, always check USEPA*[2] *and State resources.*

PFAS Health Advisories (HAs) and Maximum Contaminant Limits (MCLs)

HAs are *non-enforceable advisories* providing initial information about toxicity and lifetime exposure levels. MCLs are enforceable standards used in drinking water and cleanup programs that are developed after consideration of information needed to effectively protect human health.

EPA issued provisional HAs for drinking water for PFOA and PFOS in 2009, followed by "Final" HAs in 2016. In June 2022, EPA issued interim updates to the Lifetime HAs. EPA also added HAs for two additional PFAS: perfluorobutane sulfonic acid (PFBS) and hexafluoropropylene oxide dimer acid (HFPO-DA). EPA simultaneously lowered the HAs for PFOA and PFOS from the 2016 values. The DoD continues to use the 2016 HAs as drinking water goals.

Also in 2022, EPA issued a draft Proposed Rule to regulate PFOS and PFOA as hazardous substances under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as well as information designed to guide future permitting of PFAS discharges subject to National Pollution Discharge Elimination System (NPDES).

For cleanup, the DoD uses Regional Screening Levels (RSLs) for Tap Water at a compound-specific Hazard Quotient (HQ) of 0.1 to determine whether groundwater is impacted at levels requiring further evaluation in a Remedial Investigation. In March 2023, EPA released draft MCLs; with the goal of finalizing enforceable MCLs in 2024. Four PFAS are proposed for regulating against a site-specific Hazard Index (HI) of 1.0 based on an individual Health-Based Water Concentration (HBWC). The HI is a sum of HQs calculated as HI = [∑(site concentration)/HBWC] for the four listed compounds.

The following table lists Tap Water RSLs, relevant HBWCs, and draft MCLs as of March 2023, in nanograms per liter.

Units: ng/L	RSL	HBWC	MCL
PFOA	6	Not used	4
PFOS	4	Not used	4
PFBS	601	2000	∑HI>1.0
PFNA	6	10	
PFHxS	39	9	
HFPO-DA	6	10	

Note: See cited links below for latest updates.

What new Federal PFAS regulations are expected?

EPA's *Strategic* PFAS *Roadmap* details several actions through 2024 that affect the DOD, such as:

- Designation of some PFAS as hazardous substances, affecting cleanup, transport, and disposal. In addition to a draft proposal designating PFOS and PFOA, EPA has signaled (as of April 2023) also designating: PFDA, PFNA, PFHxS, PFHxA, PFBS, PFBA, and Gen X, as well as "precursors to PFOA and PFOS" as hazardous substances
- Requirements for monitoring and reporting the presence of 40 PFAS in National Pollutant Discharge Elimination System (NPDES) permits
- Regulations related to managing PFOA and PFOS in wastewater treatment plant biosolids/sludge

Additionally, under the National Defense Authorization Act (2019 and later) the DoD must:

- Propose blood testing for PFAS among select servicemembers with exposure to AFFF
- Remove and replace all remaining AFFF with F3

Are individual states also regulating PFAS?

In the absence of promulgated Federal standards, many states have issued PFAS standards for drinking water or groundwater. A few states have promulgated soil standards for specific PFAS. Some states have designated specific PFAS as hazardous wastes or substances, and some states have established consumer protection measures. Several States also have enacted or will soon enact bans on using AFFF containing PFAS. A current summary of state PFAS-related policies and regulations can be found in *ITRC's PFAS Guidance Document*[3], which is updated approximately monthly.

What defense environmental activities are affected by PFAS regulations?

Federal agencies have demonstrated a comprehensive PFAS response. In January 2022, the Department of Interior mandated PFAS testing of all on-site drinking water sources. NASA is performing environmental evaluations at all facilities. Department of Energy released a PFAS strategic plan in late 2022. All federal agencies were directed to avoid purchasing PFAS containing products. Broadly, all federal entities are complying with:

- AFFF removal and replacement with F3
- MCL compliance and monitoring including any newly added PFAS
- Reporting PFAS use under the Emergency Planning and Community Right-to-Know Act (EPCRA)
- Air emissions monitoring and compliance
- Transportation, storage and disposal of PFAS-containing materials

What are organizations outside of the DoD doing about PFAS?

DOD is not alone in managing and responding to regulatory changes for PFAS. Municipalities, industries, and organizations that support them are focusing on how to manage PFAS within regulatory constraints.

The table on the following page summarizes what some non-DOD organizations are doing to assess and respond to PFAS concerns such as AFFF use, environmental release, and drinking water protection.

Cited Links

1. https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024
2. https://www.epa.gov/pfas
3. https://pfas-1.itrcweb.org/

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Contacts

Authors
Rosa Gwinn, PhD
rosa.gwinn@aecom.com
Jeff Cornell, PhD
cornelljs@bv.com

PFAS Industry-Government Engagement Project Manager
Bill DiGuiseppi, PG
bill.diguiseppi@jacobs.com

Environmental Community of Interest Chair
Rick Wice, PG
Wice@Battelle.org

Emerging Issues Co-Chair
Lisa Kammer, PG
lisa.kammer@westonsolutions.com

	PFAS Working Group	Regulatory Engagement	Member Workshops	Member Guidance Docs	Funding grants
American Water Works Association (AWWA): World's principal trade organization of water utility operators, engineers, researchers and the supporting industry awwa.org	✓	✓	✓	✓	✓
Water Environment Federation (WEF): World's principal trade organization of waste water and storm water utility operators, engineers, researchers and the supporting industry wef.org	✓	✓	✓	✓	✓
American Association of Airport Executives (AAAE): Organization of airport leadership with consultants, attorneys and others involved in support roles aaae.org	✓	✓	✓	✓	
Airports Council International – North America (ACI-NA): Organization of airport operators, supported by consultants, attorneys, and others airportscouncil.org	✓	✓	✓	✓	
Transportation Research Board – Aviation Cooperative Research Program (TRB-ACRP): Part of the National Academy of Sciences, Engineering & Medicine; funded by the federal government nap.nationalacademies.org	✓	✓	✓	✓	✓
Electric Power Research Institute (EPRI): Support group for electric power industry epri.com	✓	✓	✓	✓	
American Fuel & Petrochemical Manufacturers (AFPM): leading trade association representing the makers of fuels and petrochemicals (afpm.org)	✓	✓	✓	✓	
National Association of Surface Finishers (NASF): Represents the interests of businesses, technologists and professionals in the surface coatings industry nasf.org	✓	✓	✓	✓	✓
US Chamber of Commerce (USChamber): World's largest organization of businesses of all sizes, associations, and local Chambers of Commerce uschamber.com	✓	✓	✓		